CWA COMPLIANCE EVALUATION INSPECTION REPORT
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 5

Purpose: Focused Compliance Inspection

Facility: ArcelorMittal Indiana Harbor, LLC
3001 Dickey Road
East Chicago, Indiana 46312

Date of Inspection: February 9, 2017

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Facility Representatives:

Thomas Barnett, Environmental Technology Manager
Kevin Doyle, Environmental Manager
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Final Report Date: _____

Purpose of Inspection:

Sangsook Choi, John Jurevis, and I, from the U.S. Environmental Protection Agency Region 5's Water Enforcement and Compliance Assurance Branch (WECAB), inspected ArcelorMittal Indiana Harbor, LLC's (ArcelorMittal's) Indiana Harbor (IH) West facility to investigate issues referred to WECAB by EPA Region 5's Superfund Division with regard to the presence of oil sheen at Outfalls 001, 009, and 010 and to evaluate ArcelorMittal's compliance with the Clean Water Act and applicable National Pollutant Discharge Elimination System (NPDES) permits. A map of these outfalls is included as Attachment 1. This is the first time within at least the last 5 years that WECAB inspected this facility.

ArcelorMittal's IH complex (comprised of the IH West and IH East facilities)[1] operates under three separate NPDES permits, two of which apply to the IH West facility: NPDES Permit No. IN0000205 includes Outfalls 009 and 010, and NPDES Permit No. IN0063711 includes Outfall 001.[2] According to these permits, ArcelorMittal is allowed to discharge from: (1) Outfall 009: non-contact cooling water, ground water from basement sumps, and storm water from the Power House and treated blast furnace and sinter plant[3] blowdown via Internal Outfall 509; (2) Outfall 010: non-contact cooling water, ground water from basement sumps, and storm water from the blast furnace area, sinter plant, Power House, and Boiler House and non-contact cooling water overflow from the Power House and sinter plant; and (3) Outfall 001: treated wastewater from the Central Wastewater Treatment Plant (WWTP)[4] via Internal Outfall 101 and non-contact cooling water, ground water from basement sumps, and storm water. ArcelorMittal does not treat any of the non-contact cooling water. Flow from Outfalls 009 and 010 is approximately 95 million gallons per day (MGD), and from Outfall 001 is approximately 2.5-3 MGD.

Pre-Inspection Activities:

Outfalls 009 and 010:

On January 12-13, 2017, EPA Region 5's Superfund Division inspected the IH West facility with the U.S. Coast Guard (USCG) and the Indiana Department of Environmental Management (IDEM) based on an anonymous report of oil sheen on water at Outfalls 009 and 010. During this inspection, EPA observed a sheen at these outfalls and also upstream at Outfall 001. EPA collected several sediment samples at Outfalls 009 and 010 and extracted oil from samples it took upstream for Fourier transform infrared spectroscopy (FTIR) fingerprint analysis. According to a January 27, 2017, email from Thomas Barnett, ArcelorMittal's Environmental Technology Manager, to EPA, on January 10, 2017, a bridge operator at ArcelorMittal had observed and reported to the appropriate facility personnel a significant amount of oil in the Indiana Harbor Canal. At that time, Mr. Barnett observed that approximately 48 square feet of oil had been contained within the soft boom around Outfalls 009 and 010, which ArcelorMittal

[1] ArcelorMittal Indiana Harbor, LLC and ArcelorMittal USA, LLC owns and operates the IH West and IH East facilities, respectively, as separate legal entities.
[2] IDEM issued these permits on October 26, 2011 and modified them on November 26, 2014. It modified IN0000205 again on August 25, 2016.
[3] Currently idled, and according to Mr. Barnett, ArcelorMittal has no plans to run it again.
[4] The U.S. Steel (USS) Tin Mill, pickling line, and Tandem Mill and the ArcelorMittal galvanizing lines discharge to the Central WWTP.

sampled for FTIR fingerprint analysis, and that there was a significant amount of oil flowing north through the canal. ArcelorMittal contacted National Industrial Maintenance (National), its On-Site Response Organization, to contain and recover the oil and to place another soft and another hard boom at these outfalls.

Later, on January 20, Mr. Barnett noted staining of the booms at Outfalls 009 and 010, which National subsequently and immediately replaced, and sampled the oil for FTIR fingerprint analysis. He had noted minimal staining in the week leading up to that date and no evidence of staining in the following few days after boom replacement. He also noted no oil sheen from Outfalls 009 and 010 until January 24, on which date he saw whitish material being discharged from these outfalls and turning into oil sheen, which National vacuumed away. He observed sheen being discharged three more times, for no more than 15 minutes each time, the next 2 days. To correct this, ArcelorMittal used vacuum trucks to clean sumps in the Power House that indirectly discharge to these outfalls and diverted three of them elsewhere.

Outfall 001:

According to the January 27, 2017, email, on multiple dates, Mr. Barnett witnessed an oil sheen both within and outside of the metal weir at Outfall 001 and observed oil being discharged directly from the outfall. In response, National added another soft and hard boom within the weir and added a hard boom outside it, and ArcelorMittal used a vacuum truck to remove the sheen within the containment area. Furthermore, ArcelorMittal began investigating potential sources of the discharged oil, including sumps and possible drainage within an out-of-service sinter plant, and continued to try to contain the oil sheen.

Process Description:

According to online resources, with additional information provided by Mr. Barnett during the inspection, the IH complex is the largest fully-integrated steelmaking location in North America, with a steelmaking capacity of approximately 9.5 million tons per year. The IH West (formerly owned and operated by LTV Steel Corp.) and the IH East (formerly owned and operated by Inland Steel Company) facilities began manufacturing steel in 1912 and 1897, respectively. The IH West and IH East facilities have approximately 1,500 and 3,500 employees, respectively, plus ArcelorMittal hires approximately 500 contractors. ArcelorMittal and USS own virtually all of the land along the Indiana Harbor Canal, which is listed as impaired for E. coli, biotic communities, and oil and grease.

ArcelorMittal manufactures hot and cold-rolled, hot-dipped galvanized, and aluminized steel sheet products at the IH West facility, including heavy-duty and ultra-low carbon steel, mainly for the automotive and appliance markets, among others. Everything ArcelorMittal manufactures is specifically graded for use for each customer.

The IH West facility consists of two blast furnaces, basic oxygen furnaces (BOFs), a ladle metallurgy facility, a vacuum degassing facility, continuous casting machines, slab dimensioning, and a Hot Strip Mill, and finishing operations including a pickling line, tandem and temper mills, and annealing furnaces. ArcelorMittal produces steel by first charging

pelletized iron ore (derived from iron ore from the Mesabi Nugget Iron Range in Minnesota), limestone, and coke into the top of its blast furnaces. As these materials descend to eventually become liquid iron and slag, impurities and oxygen are removed from and carbon is added to the iron ore via its reaction with the limestone and coke. Specifically, the limestone forms calcium oxide, which is used to remove sulfur from the iron. The coke reacts with preheated air that ascends through the blast furnaces, generating heat and carbon monoxide necessary to reduce iron oxides into liquid iron. The slag is comprised of calcium sulfide plus other impurities that were in the charged raw materials, and it floats on top of the molten iron.

Next, ArcelorMittal charges the carbon-saturated iron output from the blast furnaces, along with steel scrap, to refractory-lined BOFs to produce molten steel. The heat necessary to melt the scrap is generated mainly from oxidation of carbon and silicon in the iron through its reaction with blown-in, high-purity oxygen. The chemistry of the iron input and the specification of the melt determines the blowing time. In addition, flux, usually either lime or dolomite, is introduced into the BOFs to form another slag, which further removes sulfur and phosphorus from the metal.

An ancillary operation of the BOFs is ladle metallurgy, where the chemical and/or mechanical properties of the molten steel produced after initial refining in the BOFs are adjusted in a ladle to improve productivity and to make higher grades of steel in the next steps of the steelmaking process. Afterward, vacuum degassing reduces dissolved hydrogen and nitrogen in the molten steel, which prevents cracking of the final cast, and dissolved carbon, which makes the steel more ductile. Solidification of the molten steel then occurs in continuous casting machines, in which ArcelorMittal pours the steel into open-bottom, water-cooled molds, creating slabs as it passes through. ArcelorMittal cuts the slabs to desired dimensions using acetylene torch-cutting devices.

To produce steel coils, ArcelorMittal utilizes a Hot Strip Mill, which first involves reheating the slabs in furnaces to a temperature that enables rolling. ArcelorMittal uses roughing stands to reduce the slab thickness and shears to cut it into a rectangular shape. Further thinning occurs in finishing stands. The strip is then cooled at a table equipped with water-cooling sprays before being shaped into coils. According to ArcelorMittal's Spill Prevention, Control, and Countermeasure (SPCC) Plan (February 2017), the rolling process at IH West is currently idle. ArcelorMittal provided us with a copy of the SPCC Plan.

The IH West facility also has a pickling line, where iron oxide on the steel is dissolved in hydrochloric acid tanks, allowing for effective galvanization for corrosion protection; a Temper Mill, where the sheet is galvanized and its flatness is improved; a Tandem Mill, where the thickness of steel coils is reduced to final specifications; and batch and continuous annealing, where the steel is reheated to remove processing stresses, soften it, and improve the ease with which it can be cut.

Discussion with ArcelorMittal:

Ms. Choi, Mr. Jurevis, and I introduced ourselves and signed in with the security guard at the facility at 10 a.m. Mr. Barnett arrived shortly after and escorted us to a conference room, where

we presented him with our credentials. Being already aware of the purpose of our inspection, he immediately began describing the recent situation at Outfalls 009/010; Ms. Choi had announced our visit several days earlier. At this time, we also briefly met Kevin Doyle, ArcelorMittal's Environmental Manager, and shortly later, Simonne Benoit, an environmental engineer. Unless otherwise noted, we obtained the following information from Mr. Barnett.

Outfalls 009 and 010:

Expanding on what's already written above with regard to the January 10, 2017, incident, the bridge operator had observed oil and debris upstream of Outfalls 009 and 010; ArcelorMittal consistently sees oil sheen in the canal. On and around that day, extreme weather conditions, including heavy winds and rain, had caused the canal level to drop 1.67 feet, as measured by U.S. Geological Survey gauges. ArcelorMittal believes that the resulting choppy water conditions caused oil to traverse under the booms from the canal.

National conducts an "industrial marine route" inspection 5 days a week of the booms at ArcelorMittal's outfalls and was present on the 10th to observe oil with the consistency of roofing tar on the booms at Outfalls 009 and 010. FTIR analysis by the USCG revealed it to be degraded No. 6 fuel oil, which Mr. Barnett alleges is located at the bottom of the canal, and which ArcelorMittal has not used or stored at the facility for approximately 35 years. Consequently, ArcelorMittal insists it did not cause the oil sheen to be present on the canal on and around this date.

Conversely, on January 24, 2017 and the following days, Mr. Barnett reported to the USCG National Response Center four short bursts of oil being discharged from Outfalls 009 and 010. On the date of the inspection, ArcelorMittal was awaiting the results of a sample of this oil that it provided to Shell Oil, its lubricant supplier, for FTIR analysis. Convinced, through plant knowledge and investigation, that these sheen discharges originated in the Power House, ArcelorMittal redirected four of the seven sumps there to the Terminal Lagoon instead of discharging to the outfalls and will eventually redirect the remainder. ArcelorMittal pumps and recirculates oil through the Power House turbine bearings, which is cooled by non-contact cooling water. The sumps collect leaked oil. Beginning on January 26, 2017, ArcelorMittal has been submitting Power House sump pit inspection reports that it completes twice daily to EPA Region 5's Superfund Division and IDEM. We received two of these reports for February 6, 2017 (Attachment 2). ArcelorMittal also has been submitting reports of daily inspections of these outfalls plus Outfall 001. We received a copy of the February 6, 2017, report (Attachment 3). Mr. Barnett explored the facility and determined that no other sumps discharge to Outfalls 009 and 010; all the others he discovered are connected to the Terminal Lagoon. In addition, ArcelorMittal conducted at least three die tests ruling out discharge to these outfalls from other areas at the facility. By the date of this inspection, ArcelorMittal had spent approximately $215,000 to investigate and resolve the problem. Mr. Barnett made a point to mention that he does not believe that these oil discharges are a violation of the NPDES permit, however, because it states that the discharge shall not cause receiving waters to contain sheen in such degree as to create a nuisance, which he does not think happened.

Outfalls 009 and 010 currently contain three hard and two soft booms. ArcelorMittal replaces the hard ones about every 6 months and the soft ones more frequently. When asked to provide a standard operating procedure document for boom replacement, Mr. Barnett respectfully requested that we first seek to obtain such information from EPA Region 5's Superfund Division; ArcelorMittal has submitted many documents to it already.

Outfall 001:

With regard to Outfall 001, ArcelorMittal added the booms on or about January 12, 2017 to deal with oil sheen being discharged and flowing past the metal weir, which was installed in the 1980s as required by a consent decree. Since ArcelorMittal is responsible for this outfall, it is also responsible for the Central WWTP that discharges to it, even though the Nalco Company operates the plant.

As stated above, discharge includes treated wastewater from the Central WWTP via Internal Outfall 101 and non-contact cooling water. ArcelorMittal samples between Internal Outfall 101 and Outfall 001. Ninety percent of the discharge from Internal Outfall 101 is from the USS-owned and operated Tin Mill, with the remainder from the galvanizing lines. USS pays ArcelorMittal a fee to send its discharge to the Central WWTP. ArcelorMittal has been working on a deal with USS to have it begin regularly inspecting the manholes at the Tin Mill to ensure oil is not present. USS uses oil emulsions as coolant for its cold-rolling process.

ArcelorMittal uses oil only for lubrication, which arrives by tanker truck. The SPCC Plan for the IH West facility includes a list of the oil tanks on-site. The facility has one diesel and one gas underground storage tank, which ArcelorMittal stated is in full compliance with applicable regulations.

Finally, as stated above, ArcelorMittal also discharges storm water from storm sewers to Outfalls 001, 009, and 010. All storm water at the facility either goes to a storm sewer or into the ground. ArcelorMittal constructed berms around the entire IH West facility to prevent storm water runoff into the surrounding water bodies. ArcelorMittal inspects these berms quarterly per its Storm Water Pollution Prevention Plan (SWPPP). ArcelorMittal provided us with a copy of the current SWPPP (November 2015).

Facility Tour:

We toured the IH West facility starting at approximately 12 p.m. All photos that I took are included in the Photo Log in Attachment 4. Mr. Barnett first took us to a 256,000-gal used oil tank, which is located next to the Power House, and which is the largest storage tank at the facility (Photo 1). It is surrounded by an approximately 1-foot high wall. According to the SPCC Plan, ArcelorMittal uses vacuum trucks to remove liquid from within the containment area; there are no drainage valves at any diked oil containment at the facility. Most of the oil storage tanks at the facility are indoors. Specifically, all lubricating oil tanks for the processes that discharge to Outfalls 009 and 010 are located indoors.

Mr. Barnett then took us to Outfalls 009 and 010, where we noticed National in the area to conduct its industrial marine route inspection (Photo 2). ArcelorMittal conducts flow-proportional composite sampling at Outfalls 009 and 010 in 72-inch sewers that are about 20 feet apart, and about 15 feet inland from the canal (Photos 3 and 4), with a sampling shed located in between (Photo 5). Despite the observed fast flow through these sewers, Mr. Barnett stated that ArcelorMittal is also able to effectively conduct required grab sampling. As a side note, it had installed deflectors to diminish the discharge flow, which was high enough to cause passing ships to swerve. We did not notice any oil at these outfalls (Photo 6) or obvious oil staining on their booms (Photos 7-9).

Lastly, we briefly visited the Terminal Lagoon (Photo 10) before ultimately ending up at Outfall 001. We witnessed oil sheen being discharged directly from this outfall, flowing past the soft boom at the discharge point up to the metal weir (Photos 11-13). We also examined the water up to the surrounding hard and soft booms, but did not observe any discernable sheen outside of the weir. (Photos 14-18). However, I did notice that the hard boom at the southern end of the Outfall 001 containment area dipped below the surface of the canal with no further blockage, such that if sheen were to be present outside of the weir, it could potentially flow outside of the entire containment area (Photo 18).

During the tour, we were not allowed to go inside any process building because we had not taken the required safety training, so we could not inspect any operating equipment, storage tanks, sumps, and sewers within for evidence of oil spillage. Our inspection ended a little after 1 p.m. because Mr. Barnett had to meet with USS to discuss measures for addressing the oil sheen at Outfall 001, but he insisted that we are welcome to come back another time.

Areas of Concern:

Included below are potential areas of concern we observed during the inspection:

1. Presence of oil sheen from Outfall 001; and
2. Potential for oil sheen to flow outside of the Outfall 001 containment area.

Attachments:

1. Map of Outfalls 001, 009, and 010;
2. February 6, 2017, Power House sump pit inspection reports by ArcelorMittal;
3. February 6, 2017, Outfall 001, 009, and 010 inspection report by Arcelormittal; and
4. Photo Log.